

REMARKS

The above amendments to the above-captioned application along with the following remarks are being submitted as a full and complete response to the Official Action dated August 26, 2003. In view of the above amendments and the following remarks, the Examiner is respectfully requested to give due reconsideration to this application, in connection with the Request for Continued Examination filed herewith, to indicate the allowability of the claims, and to pass this case to issue.

Status of the Claims

Claims 1-6 and 34-43 are under consideration in this application. Claims 22-33 are being cancelled without prejudice or disclaimer. Claims 1, 3-6, 34-43 are being amended, as set forth in the above marked-up presentation of the claim amendments, in order to more particularly define and distinctly claim applicants' invention.

Additional Amendments

The claims are being amended to correct formal errors and/or to better recite or describe the features of the present invention as claimed. All the amendments to the claims are supported by the specification. Applicants hereby submit that no new matter is being introduced into the application through the submission of this response.

Formality Rejection

Claim 34 was rejected under 35 U.S.C. § 112, second paragraph, for insufficient antecedent basis. As indicated, the claim has been amended. Accordingly, the withdrawal of the outstanding informality rejection is in order, and is therefore respectfully solicited.

Prior Art Rejections

Claims 22, 24, 26 and 28 were rejected under 35 U.S.C. § 102(e) as being anticipated by Izumi (6,417,898 B1), and claims 34, 39, 40 and 43 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Pat. No. 5,781,261 to Ohta et al. (hereinafter "Ohta"). Under 35 U.S.C. § 103(a), 1) Claim 1 was rejected on the grounds of being unpatentable over U.S. Pat. No.

6,445,432 to Yamamoto et al. (hereinafter “Yamamoto”), 2) Claim 2 was rejected on the grounds of being unpatentable over Yamamoto in view of Huang et al. (6,466,281), 3) Claim 4 was rejected on the grounds of being unpatentable over Yamamoto in view of Huang et al. '281 in further view of Ohta, 4) Claims 3, 5, and 6 were rejected on the grounds of being unpatentable Yamamoto in view of Ohta, 5) Claim 23 was rejected on the grounds of being unpatentable over Izumi (6,417,898 B1) in view of Ohta, 6) Claim 25 was rejected on the grounds of being unpatentable over Izumi '898 in view of Ogura et al. (6,271,902 B1), 7) Claim 29 was rejected on the grounds of being unpatentable over Izumi '898 in view of Huang et al. (6,466,281 B1), 8) Claims 27 and 33 were rejected on the grounds of being unpatentable over Izumi '898 in view of Kikkawa et al. (6,330,043 B1), 9) Claims 30-32 were rejected on the grounds of being unpatentable over Izumi '898 in view of Matsumoto et al. (6,414,732 B1), 10) Claims 35-38 were rejected on the grounds of being unpatentable over Ohta in view of Kim et al. (5,850,271), and 11) Claims 41 and 42 were rejected on the grounds of being unpatentable over Ohta in view of Izumi '898. These rejections have been carefully considered, but are most respectfully traversed.

The liquid crystal display device of the invention (Fig. 1), as now recited in claim 1, comprises a first and a second transparent substrates SUB1, SUB2, and a liquid crystal layer LC sandwiched therebetween, wherein the first substrate SUB1 includes a plurality of video signal lines DL, a plurality of scanning signal lines, and a plurality of pixel regions formed as being surrounded by respective neighboring video signal lines DL and scanning signal lines, each of the pixel regions includes one active element, one pixel electrode PX, and at least one color filter CF formed between the pixel electrode PX and the liquid crystal layer LC, a boundary (right-hand side of Fig. 1) between color filters (e.g., FIL(G), FIL(R)) of neighboring pixel regions which are arranged close to each other in the extending direction of the scanning signal lines positioned on top of a respective video signal line DL, and a light shielding layer BM is formed between said color filter CF and the liquid crystal layer LC and superposed on top of the boundary and the respective video signal line DL. In other words, the invention provides a **BM-Boundary-DL** stacking structure. The manufacturing steps are shortened due to such a constitution. Further, by forming the boundary of the neighboring color filters on the video signal line and by forming the light shielding layer BM on top of the boundary, the margin for positioning is reduced and the numerical aperture is enhanced (page 6, last paragraph).

Figs. 2, 3G and 8 of Yamamoto are relied upon by the Examiner to anticipate claim 1. However, the right-hand side of Fig. 2 of Yamamoto shows the color filter 10 is spaced apart from the color filter 11 by the pixel electrode 15 in the contact hole 18, rather than directly contacting each other with a (vertical) boundary in the extending direction of the scanning signal lines 3 (perpendicular to the paper surface of Fig. 2) but no space in-between. In addition, the space between the color filters 10, 11 does NOT superpose on top of the video signal line 6. The left-hand side of Fig. 2 of Yamamoto shows the color layer 11 is superposed on top of the color layer 10 with a horizontal boundary; however, there is NO video signal line 6 underneath to provide a BM-Boundary-DL stacking structure. Fig. 3G of Yamamoto shows a space (rather than a boundary) between the color filters 10, 11, 12, and the signal line 6 (unmarked) is buried under each of the color filters rather than underneath the space or any boundary. Other references fail to compensate for such deficiencies.

The invention, as now recited in claim 34, is also directed to a liquid crystal display device comprising a first and a second transparent substrates SUB1, SUB2, and a liquid crystal layer LC sandwiched therebetween, wherein the first substrate SUB1 includes a plurality of video signal lines SD1, a plurality of scanning signal lines, and a plurality of pixel regions formed as being surrounded by respective neighboring video signal lines SD1 and scanning signal lines, each of the pixel regions includes at least one active element and one pixel electrode PX, a light shielding layer BM laminated by a common electrode CT (or a common electrode line CL, “*Since the common electrode lines CL on the video signal lines also function as the common electrodes CT, the manner of naming is not important*” page 17, last paragraph) which is arranged above a respective video signal line SD1 with an insulation film therebetween (which may include a color filter, a protection film PSV, etc.; see left-hand side of Fig. 1), the light shielding layer BM is made of metal, and the common electrode CT/CL is made of a transparent conductive body.

As an example, forming the light shielding layers BM using the metal films made of Cr or Mo and the common electrodes using the transparent conductive films to provide the laminated structure above the drain lines DL in a spaced-apart manner by way of the color filters FIL brings about two advantages: enhancing the contrast ratio due to the light shielding in the vicinity of the drain lines DL and enhancing the numerical aperture due to the use of the transparent electrodes as the common electrodes CL (page 17, last paragraph).

Figs. 5 and 6 of Ohta are relied upon by the Examiner to anticipate claim 34. However,

in all the figures of Ohta (e.g., Fig. 5), the shielding layer 5 is separated from the common electrode 4. In fact, Ohta suggests separating the shielding layer from the common electrode. For example, Fig. 2 shows the shielding layer 5 is laminated to the TFT area such that the shielding layer 5 can not possibly work as a common electrode. It is well established that a rejection based on cited references having contradictory principles or principles that teach away from the invention is improper.

The Examiner's reliance upon the "common knowledge and common sense" of one skilled in the art for the motivation to combine the teachings in Yamamoto and Applicant Admitted prior art (page 5, lines 3-7) did not fulfill the agency's obligation to cite references to support its conclusions. Instead, the Examiner must provide the specific teaching of allegations of combination on the record, such as citation in the particular prior art references regarding "forming color layers under the light shielding layer to realize a stable contrast and obtain high total optical density for the display," on the record to allow accountability.

To establish a prima facie case of obviousness, the Board must, inter alia, show "some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references." In re Fine, 837 F.2d 1071, 1074, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). "The motivation, suggestion or teaching may come explicitly from statements in the prior art, the knowledge of one of ordinary skill in the art, or, in some cases the nature of the problem to be solved." Kotzab, 217 F.3d at 1370, 55 USPQ2d at 1317. Recently, in In re Lee, 277 F.3d 1338, 61 USPQ2d 1430 (Fed. Cir. 2002), we held that the Board's reliance on "common knowledge and common sense" did not fulfill the agency's obligation to cite references to support its conclusions. Id. at 1344, 61 USPQ2d at 1434. Instead, the Board must document its reasoning on the record to allow accountability. Id. at 1345, 61 USPQ2d at 1435.

See In re Thrift, 298 F.3d 1357.

Such an obligation to provide specific teaching(s) also applies to other existing or future obviousness rejections.

Applicants contend that the cited prior art references or their combination fail to teach or disclose each and every feature of the present invention as disclosed in independent claims 1 and 34. As such, the present invention as now claimed is distinguishable and thereby allowable over the rejections raised in the Office Action. The withdrawal of the outstanding prior art rejections

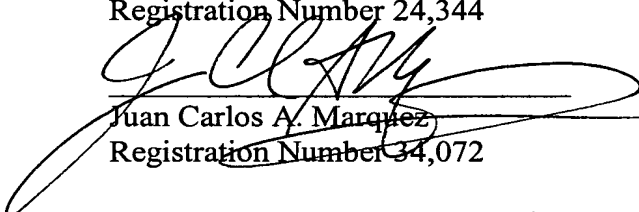
is in order, and is respectfully solicited.

In view of all the above, clear and distinct differences as discussed exist between the present invention as now claimed and the prior art reference upon which the rejections in the Office Action rely, Applicants respectfully contend that the prior art references cannot anticipate the present invention or render the present invention obvious. Rather, the present invention as a whole is distinguishable, and thereby allowable over the prior art.

Favorable reconsideration of this application is respectfully solicited. Should there be any outstanding issues requiring discussion that would further the prosecution and allowance of the above-captioned application, the Examiner is invited to contact the Applicants' undersigned representative at the address and phone number indicated below.

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